-continued

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Pro Glu Val Leu Val Gln Glu Val Ile Asp Gln Leu Lys Ala Trp Gly
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What is claimed is:

1. A method for the production of isoprenoid compounds comprising: contacting a transformed host cell under suitable growth conditions with an effective amount of a carbon source whereby an isoprenoid compound is produced, said transformed host cell comprising a nucleic acid molecules encoding SEQ ID NOs: 2 under the control of suitable regulatory sequences.

2. A method according to claim 1 wherein the transformed host cell is selected form the group consisting of Aspergillus, Trichoderma, Saccharomyces, Pichia, Candida, Hansenula, Salmonella, Bacillus, Acinetobacter, Rhodococcus, Streptomyces, Escherichia, Pseudomonas, Methylomonas, Methylobacter, Alcaligenes, Synechocystis, Anabaena, Thiobacillus, Methanobacterium and Klebsiella.

3. A method according to claim 1 wherein said transformed host cell is a methanotrophic bacteria.

4. A method according to claim 3 wherein said methanotrophic bacteria:

(a) grows on a C1 carbon substrate selected from the group consisting of methane and methanol; and

(b) comprises a functional Embden-Meyerof carbon pathway, said pathway comprising a gene encoding a pyrophosphate dependent phosphofructokinase enzyme.

5. A method according to claim 3 wherein the methanotrophic bacteria is selected from the group consisting of Methylomonas, Methylobacter and Methanobacterium and the carbon source is selected from the group consisting of methane and methanol.

6. A method according to claim 4 wherein said methanotrophic bacteria is methylomonas 16a ATCC PTA 2402.

7. A method according to claim 1 wherein the transformed host cell is selected form the group consisting of soybean, rapeseed, sunflower, cotton, corn, tobacco, alfalfa, wheat, barley, oats, sorghum, rice, Arabidopsis, cruciferous vegetables, melons, carrots, celery, parsley, tomatoes, potatoes, strawberries, peanuts, grapes, grass seed crops, sugar beets, sugar cane, beans, peas, rye, flax, hardwood trees, softwood trees, and forage grasses.

8. A method according to claim 1 wherein the carbon source is selected from the group consisting of monosaccharides, oligosaccharides, polysaccharides, carbon dioxide, methanol, methane, formaldehyde, formate, and carbon-containing amines.

* * * * *

not claim

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385                 390                 395                 400
His Glu Asp Glu Thr Gly Tyr Pro Asp Asp Leu Leu Ala Glu Asp Gly
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        435                 440                 445
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gctaataccg catacgctct acggaggaaa gccggggacc ttcgggcctg gcgctaatag  180
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Not claimed

What is claimed is:

1. A pure isolate of a high growth methanotrophic bacterial strain which:
   (a) grows on a C1 carbon substrate selected from the group consisting of methane and methanol; and
   (b) comprises a functional Embden-Meyerhof carbon pathway, said pathway comprising a gene encoding a pyrophosphate dependent phosphofructokinase enzyme, the gene comprising an isolated nucleic acid molecule encoding the amino acid sequence as set forth in SEQ ID NO: 6.

2. A high growth methanotropic bacterial strain according to claim 1 wherein the strain contains a functional Entner-Douderoff carbon pathway.

3. A bacterial strain according to claim 1 having at least one gene encoding a fructose bisphosphate aldolase enzyme.

4. A bacterial strain according to claim 3 wherein at least one gene encodes a fructose bisphosphate aldolase enzyme having the amino acid sequence selected from the group consisting of SEQ ID NO:16 and SEQ ID NO:18.

5. The bacterial strain of claim 1 wherein the strain is a Methylomonas sp.

6. The bacterial strain of claim 5 having a 16s RNA profile as set forth in SEQ ID NO:81.

7. The bacterial strain of claim 1 wherein, when the C1 carbon substrate is methanol, the strain produces glycogen comprising at least about 50% dry weight of biomass.

8. The bacterial strain of either claim 1 or claim 7 wherein the methanol concentration in the medium is about 2.5% (vol/vol).

9. The bacterial strain of any of claims 1 or 2 having a yield of greater than 1.0 grams of cell mass per gram of methane consumed.

10. The bacterial strain of any of claims 1 or 2 having a yield of greater than 0.5 grams of cell mass per gram of methane consumed.

11. The bacterial strain of any of claims 1 or 2 having a carbon conversion efficiency of greater than 40 g/mol methane/g/mol biomass.

12. The bacterial strain of any of claims 1 or 2 having a carbon conversion efficiency of greater than 64 g/mol methane/g/mol biomass.

13. A pure isolate of a high growth methanotrophic bacterial strain which grows on a C1 carbon substrate selected from the group consisting of methanol and methane, comprising the 16s RNA sequence as set forth in SEQ ID NO:81 and having at least one gene encoding a pyrophosphate dependent Phosphofructokinase enzyme.

14. A pure isolate of a high growth methanotrophic bacterial strain having the ATCC designation PTA 2402.

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